REMARKS

I. Terminal Disclaimer

A terminal disclaimer and a check in payment of the fee associated with the terminal disclaimer are submitted herewith in response to the Examiner's rejection of claims 21-28 under the judicially created doctrine of double patenting.

II. 35 U.S.C. 102(e) and 103(a) Rejections

Claims 21-23 and 25-27 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,850,480 ("Scanlon") and Claims 24 and 28 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Scanlon in view of U.S. Patent No. 6,047,093 ("Lopresti et al."). Applicant respectfully submits that these claims are neither anticipated nor rendered obvious by these references.

(1) Clarification of Subject Matter in the Present Application

It appears, from the remarks made in the Office action, that the Examiner does not completely grasp the contents of the present application, especially with reference to the discussion relating to Fig. 15. Applicant respectfully submits that the description of the present application sufficiently describes the present invention for one of ordinary skill in the art to understand the invention; however, in order to assist the Examiner in properly understanding this portion of the present application, Applicant has provided herewith additional description and has attached additional drawings (Drawings A-D) that are referenced in the additional description. The additional description and drawings provided herewith in no way affect the subject matter defined in Claims 21-28 and are only provided for clarification purposes.

The present claims are directed to a technique of performing a voting process with use of two tables (for example, those shown in FIG. 15), thereby achieving a high-speed matching process. For example, the matching process that uses the first and second tables as shown in Drawings A and B attached hereto will be described.

First, the description of the first and second tables will be provided. The first table is a table used to specify the type of each character in an entered character string and the order of appearance of each character. The first table is a matrix of cells of rows and columns. Each row

(vertical axis) of the first table is used to specify the type of each character in an entered character string. In the examples shown in Drawings A and B, the rows of the first table are assigned respectively to different types of characters, namely, 26 characters of the alphabet from "A" to "Z". On the other hand, each column (horizontal axis) of the first table is used to specify the order of appearance of each character in an entered character string (that is, the position of a character in a sequence). The columns of the first table are required to have a length corresponding to the number of characters in the entered character string.

The second table is made of a one-row memory for voting for each dictionary character string. The second table has a number of voting positions equivalent to [(the number of characters in an entered character string) + (the number of characters in a dictionary character string) - 1]. The voting positions of the second table are assigned to serial numbers 0, 1, 2,..., starting from the right end.

Further, each voting position of the second table is provided with a link from the first table based on the type of each character in the dictionary character string and the order of appearance of each character. As used in the previous sentence, "provided with a link" indicates the memory address of the voting position in the second table. That is, when a character in an entered character string and a character in a dictionary character string are matched, the voting position in the second table is at a serial number of [(the order of appearance of the character In the entered character string - the order of appearance of the character in the dictionary character string) + (the number of characters in the dictionary character string - 1)]. Therefore, regardless of the number of characters in the entered character string, the voting position in the second table is determined in this manner. When a dictionary character string is determined, a link (voting link) from the first table to the second table can be provided in advance.

As described above, each character specified by the first table (that is, each cell in the first table), is provided with every possible link for the voting position of the second table.

As an example, the dictionary character string is "STRING". In such a case, the fifth voting position of the second table is provided with links from each of the cell at "S row, 1st column", the cell at "T row, 2nd column", the cell at "R row, 3rd column", the cell at "I row, 4th column", the cell at "N row, 5th column" and the cell at "G row, 6th column". Further, when the position error due to noise is considered, for example, the fourth voting position of the second

table is provided with links from the cell at "S row, 2nd column", the cell at "T row, 3rd column". When every possible link is made in the above-mentioned manner, a voting table made of the first and second tables is completed.

In the first and second tables described above, if each character in an entered character string is specified in the first table, a vote for the second table is determined. In other words, a vote can be made for the second table only by specifying each character in the entered character string in the first table. This fact indicates that the number of processing steps in voting is equivalent to the number of characters in an entered character string.

Next, the procedure of the matching process using the first and second tables shown in Drawing A will now be described. When the entered character string is "STNING", the first character "S" is assigned as "S row, 1st column" in the first table. Similarly, the second character "T" is assigned as "T row, 2nd column", the third character "R" is assigned as "N row, 3rd column", the fourth character "I" is assigned as "I row, 4th column", the fifth character "N" is assigned as "N row, 5th column" and the sixth character "G" is assigned as "G row, 6th column".

In this example, the cell at "S row, 1st column" in the first table, which corresponds to the first character "S" in the entered character string, is provided with a link to the fifth voting position in the second table. Therefore, when it is specified that the first character "S" in the entered character string is of "S row, 1st column" in the first table, a vote is made for the fifth voting position in the second table. In the case where a cell in the first table is provided with links to a plurality of voting positions in the second table, a vote is made to all of the linked positions.

After the voting process described above is performed for each character of the entered character string, the voting result indicating matching between the entered character string "STNING" and the dictionary character string "STRING" is obtained in the second table.

Focusing on the number of processing steps involved in the voting process described above, it is understood that the table is searched and a vote is made for the number of times corresponding to the number of characters in the entered character string. In other words, a voting result can be obtained only by performing the voting process for the number of times corresponding to the number of characters in the entered character string, thereby making it

possible to achieve a high-speed matching process. By contrast, in the conventional matching method, the comparison between each character of the entered character string and each character of the dictionary character string must be carried out for every possible combination. Therefore, the conventional method requires more time in the matching process as compared to the present invention.

Further, Drawing B illustrates that a vote can be made to two or more dictionary character strings at once for one entered character string. This is achieved by the following manner. As shown in Drawing B, two or more second tables are prepared to correspond to the two or more dictionary character strings respectively, and the first table is provided with a link to each of these second tables. In addition to the table (second table) for voting for the dictionary character string "STRING", another table (second table) for voting for the dictionary character string "N A T" is formed, and each of these tables for voting is provided with a link from the first table. (There are a huge number of links and therefore Drawing B shows the main links and the others are omitted.)

As a practical case, when a vote is made to a plurality of dictionary character strings for one entered character string, the vote can be made in the same manner as described above. For example, the first character in the entered character string is specified in the first table, and if a plurality of links are provided for the specified cell of the first table, a vote is made to each of the linked positions. Here, note that there is no need to judge if a linked position is in one of the second tables corresponding to "STRING" or if it is in the other of the second tables corresponding to "NAT".

As described above, with use of the first table that is provided with a plurality of links to the second tables corresponding to a plurality of dictionary character strings, a vote can be made to these dictionary character strings only by searching the first table for the number of times corresponding to the number of characters in an entered character string. Thus, with regard to each character of the entered character string, a vote can be made to each of these dictionary character strings. In this manner, the speed of the matching process can be significantly increased.

Next, with reference to Fig. 15 of the present application, the voting tables (the first table and second table) for dictionary character strings "AMERICA", "CANADA", etc., will now be further explained.

In Fig. 15 of the present application, a huge number of links exist and for simplicity, only the first few links of Fig. 15 are shown. Drawings C and D attached hereto show some of the links omitted from Fig. 15.

Drawing C not only shows the links from the cells of the first table to the second table corresponding to the dictionary character string "AMERICA" when there is no noise in the entered character string, but also shows the links from the cell "A row, 2nd column" of the first table to the second table corresponding to the dictionary character string "AMERICA" when it is considered that there is noise in the entered character string.

Further, Drawing D shows all the links to the second tables corresponding to the dictionary character strings "AMERICA" and "CANADA" when there is no noise in the entered character string.

(2) Disclosure of the Cited References

Scanlon and Lopresti et al. only teach a method in which matching is performed while analyzing which characters correspond to each other, in an order starting from one end of the character string. More specifically, these references are directed to a matching method that is carried out from the starting end while analyzing "whether or not a character and the next character are matched" or "how many characters are matched at a present stage" at all times. Thus, according to the technique disclosed in these references, the matching must be carried out accurately for each character while analyzing the local sequence of characters, and therefore the processing time inevitably becomes long.

(3) Features of the Present Invention

In contrast, Applicant's claims call for a first table for specifying types and orders of the characters appearing in the first character string and a second table for voting to each of the various types of the second character strings, which are set to correspond to the orders of appearance and types of the characters specified by the first table. Then, without considering

which character of the first character string and which character of the second character string correspond, voting is performed to the second table on the basis of the type and the order of appearance of each of the characters of the first character string specified by the first table, and it is determined as a result of voting to the second table whether or not the first character string as a result of recognition and the second character string stored in advance in the dictionary are matched.

(4) Comparison Between the Present Invention and the Cited References

As compared to the references described above, the present invention is a method that refers to merely whether or not there are similar characters in two character strings. The method of the present invention allows voting to be earned for a plurality of sections at once and a great number of character strings can be matched with one character string at once.

Further, it is not necessary to compare two character strings while analyzing the local sequence of characters in the two character strings, and therefore the matching can be performed at a high speed.

In particular, the first and second tables of the present invention operate as follows. When the position of each character in the first character string in the first table is specified (the position being based on the character type and the order of appearance), the voting position in the second table is automatically determined while associating the position of the first table with the position of the second table. The sections identified by the Examiner in Scanlon as corresponding to the first table and second table of the present invention are entirely different from these tables.

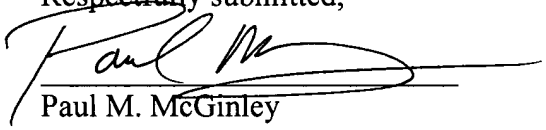
For these and other reasons, independent Claims 21 and 25 are allowable. Claims 22-24 and 26-28 respectively depend from independent Claims 21 and 25 and are allowable for the same and other reasons.

CONCLUSION

In view of the foregoing, consideration of the Applicant's remarks and allowance of Claims 21-28 are respectfully requested.

The undersigned is available for telephone consultation during normal business hours.

Respectfully submitted,



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